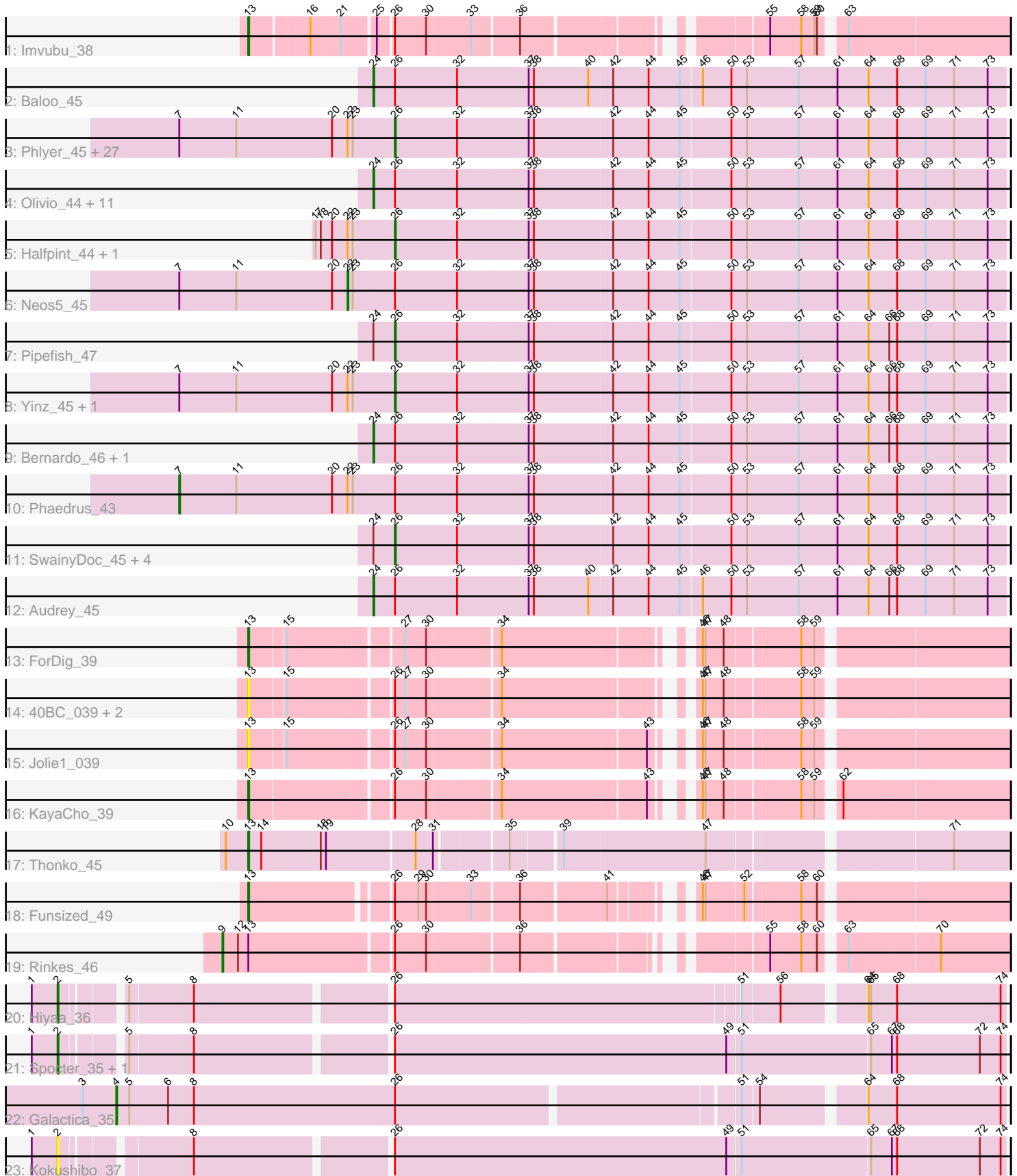


Pham 311548



Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. If this default region is judged to be packed too tightly with annotated starts, the track will be further scaled to only show that region of the ORF with annotated starts. This action will be indicated by adding "Zoomed" to the title. For starts, yellow indicates the location of called starts comprised solely of Glimmer/GeneMark auto-annotations, green indicates the location of called starts with at least 1 manual gene annotation.

## Pham 311548 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311548 has 71 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Imvubu\_38
- Track 2 : Baloo\_45
- Track 3 : Phlyer\_45, Mulaychimus\_45, Heathcliff\_45, Daisy\_45, Jackstina\_42, Yahalom\_45, GlenHope\_46, Nozo\_45, Chandler\_45, Athena\_46, SynergyX\_45, ChaChing\_45, Tydolla\_45, RagingRooster\_45, Briakila\_46, Compostia\_46, Corofin\_45, OrangeOswald\_45, Akoma\_45, Chalmers\_45, Shenandoah\_45, Gadget\_46, Deenasa\_45, HarveySr\_45, Philly\_44, RomaT\_45, Glubnar\_46, Marlia\_45
- Track 4 : Olivio\_44, MmasiCarm\_45, Obutu\_45, Phayeta\_46, SlippinJimmy\_45, LestyG\_45, Abinghost\_45, Chentzyk\_45, Devonte\_45, Casbah\_44, TinyTerror\_45, Rita1961\_45
- Track 5 : Halfpint\_44, Kamiyu\_45
- Track 6 : Neos5\_45
- Track 7 : Pipefish\_47
- Track 8 : Yinz\_45, Kronus\_44
- Track 9 : Bernardo\_46, Mortcellus\_44
- Track 10 : Phaedrus\_43
- Track 11 : SwainyDoc\_45, Gervas\_45, Ben11\_44, Morty007\_45, Marley1013\_45
- Track 12 : Audrey\_45
- Track 13 : ForDig\_39
- Track 14 : 40BC\_039, Hosp\_037, 39HC\_039
- Track 15 : Jolie1\_039
- Track 16 : KayaCho\_39
- Track 17 : Thonko\_45
- Track 18 : Funsized\_49
- Track 19 : Rinkes\_46
- Track 20 : Hiyaa\_36
- Track 21 : Spocter\_35, Keanu\_36
- Track 22 : Galactica\_35
- Track 23 : Kokushibo\_37

***Summary of Final Annotations (See graph section above for start numbers):***

The start number called the most often in the published annotations is 26, it was called in 35 of the 61 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akoma\_45, Athena\_46, Ben11\_44, Briakila\_46, ChaChing\_45, Chalmers\_45, Chandler\_45, Compostia\_46, Corofin\_45, Daisy\_45, Deenasa\_45, Gadget\_46, Gervas\_45, GlenHope\_46, Glubnar\_46, Halfpint\_44, HarveySr\_45, Heathcliff\_45, Jackstina\_42, Kamiyu\_45, Kronus\_44, Marley1013\_45, Marlia\_45, Morty007\_45, Mulaychimus\_45, Nozo\_45, OrangeOswald\_45, Philly\_44, Phlyer\_45, Pipefish\_47, RagingRooster\_45, RomaT\_45, Shenandoah\_45, SwainyDoc\_45, SynergyX\_45, Tydolla\_45, Yahalom\_45, Yinz\_45,

Genes that have the "Most Annotated" start but do not call it:

- 39HC\_039, 40BC\_039, Abinghost\_45, Audrey\_45, Baloo\_45, Bernardo\_46, Casbah\_44, Chentzyk\_45, Devonte\_45, Funsized\_49, Galactica\_35, Hiyaa\_36, Hosp\_037, Imvubu\_38, Jolie1\_039, KayaCho\_39, Keanu\_36, Kokushibo\_37, LestyG\_45, MmasiCarm\_45, Mortcellus\_44, Neos5\_45, Obutu\_45, Olivio\_44, Phaedrus\_43, Phayeta\_46, Rinkes\_46, Rita1961\_45, SlippinJimmy\_45, Spocter\_35, TinyTerror\_45,

Genes that do not have the "Most Annotated" start:

- ForDig\_39, Thonko\_45,

### Summary by start number:

Start 2:

- Found in 4 of 71 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 3 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hiyaa\_36 (BQ), Keanu\_36 (BQ), Kokushibo\_37 (BQ), Spocter\_35 (BQ),

Start 4:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Galactica\_35 (BQ),

Start 7:

- Found in 32 of 71 ( 45.1% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 3.1% of time when present
- Phage (with cluster) where this start called: Phaedrus\_43 (B3),

Start 9:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Rinkes\_46 (B9),

Start 13:

- Found in 10 of 71 ( 14.1% ) of genes in pham
- Manual Annotations of this start: 5 of 61

- Called 90.0% of time when present
- Phage (with cluster) where this start called: 39HC\_039 (B6), 40BC\_039 (B6), ForDig\_39 (B6), Funsized\_49 (B9), Hosp\_037 (B6), Imvubu\_38 (B10), Jolie1\_039 (B6), KayaCho\_39 (B6), Thonko\_45 (B8),

Start 22:

- Found in 34 of 71 ( 47.9% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 2.9% of time when present
- Phage (with cluster) where this start called: Neos5\_45 (B3),

Start 24:

- Found in 22 of 71 ( 31.0% ) of genes in pham
- Manual Annotations of this start: 14 of 61
- Called 72.7% of time when present
- Phage (with cluster) where this start called: Abinghost\_45 (B3), Audrey\_45 (B3), Baloo\_45 (B3), Bernardo\_46 (B3), Casbah\_44 (B3), Chentzyk\_45 (B3), Devonte\_45 (B3), LestyG\_45 (B3), MmasiCarm\_45 (B3), Mortcellus\_44 (B3), Obutu\_45 (B3), Olivio\_44 (B3), Phayeta\_46 (B3), Rita1961\_45 (B3), SlippinJimmy\_45 (B3), TinyTerror\_45 (B3),

Start 26:

- Found in 69 of 71 ( 97.2% ) of genes in pham
- Manual Annotations of this start: 35 of 61
- Called 55.1% of time when present
- Phage (with cluster) where this start called: Akoma\_45 (B3), Athena\_46 (B3), Ben11\_44 (B3), Briakila\_46 (B3), ChaChing\_45 (B3), Chalmers\_45 (B3), Chandler\_45 (B3), Compostia\_46 (B3), Corofin\_45 (B3), Daisy\_45 (B3), Deenasa\_45 (B3), Gadget\_46 (B3), Gervas\_45 (B3), GlenHope\_46 (B3), Glubnar\_46 (B3), Halfpint\_44 (B3), HarveySr\_45 (B3), Heathcliff\_45 (B3), Jackstina\_42 (B3), Kamiyu\_45 (B3), Kronus\_44 (B3), Marley1013\_45 (B3), Marlia\_45 (B3), Morty007\_45 (B3), Mulaychimus\_45 (B3), Nozo\_45 (B3), OrangeOswald\_45 (B3), Philly\_44 (B3), Phlyer\_45 (B3), Pipefish\_47 (B3), RagingRooster\_45 (B3), RomaT\_45 (B3), Shenandoah\_45 (B3), SwainyDoc\_45 (B3), SynergyX\_45 (B3), Tydolla\_45 (B3), Yahalom\_45 (B3), Yinz\_45 (B3),

### Summary by clusters:

There are 6 clusters represented in this pham: B6, BQ, B10, B3, B8, B9,

Info for manual annotations of cluster B10:

- Start number 13 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B3:

- Start number 7 was manually annotated 1 time for cluster B3.
- Start number 22 was manually annotated 1 time for cluster B3.
- Start number 24 was manually annotated 14 times for cluster B3.
- Start number 26 was manually annotated 35 times for cluster B3.

Info for manual annotations of cluster B6:

- Start number 13 was manually annotated 2 times for cluster B6.

Info for manual annotations of cluster B8:

- Start number 13 was manually annotated 1 time for cluster B8.

Info for manual annotations of cluster B9:

- Start number 9 was manually annotated 1 time for cluster B9.
- Start number 13 was manually annotated 1 time for cluster B9.

Info for manual annotations of cluster BQ:

- Start number 2 was manually annotated 3 times for cluster BQ.
- Start number 4 was manually annotated 1 time for cluster BQ.

### **Gene Information:**

Gene: 39HC\_039 Start: 38257, Stop: 37487, Start Num: 13

Candidate Starts for 39HC\_039:

(Start: 13 @38257 has 5 MA's), (15, 38218), (Start: 26 @38110 has 35 MA's), (27, 38098), (30, 38074), (34, 37996), (46, 37810), (47, 37807), (48, 37786), (58, 37705), (59, 37690),

Gene: 40BC\_039 Start: 38257, Stop: 37487, Start Num: 13

Candidate Starts for 40BC\_039:

(Start: 13 @38257 has 5 MA's), (15, 38218), (Start: 26 @38110 has 35 MA's), (27, 38098), (30, 38074), (34, 37996), (46, 37810), (47, 37807), (48, 37786), (58, 37705), (59, 37690),

Gene: Abinghost\_45 Start: 40228, Stop: 39506, Start Num: 24

Candidate Starts for Abinghost\_45:

(Start: 24 @40228 has 14 MA's), (Start: 26 @40204 has 35 MA's), (32, 40132), (37, 40051), (38, 40045), (42, 39955), (44, 39916), (45, 39880), (50, 39823), (53, 39805), (57, 39745), (61, 39700), (64, 39664), (68, 39631), (69, 39598), (71, 39565), (73, 39526),

Gene: Akoma\_45 Start: 40208, Stop: 39510, Start Num: 26

Candidate Starts for Akoma\_45:

(Start: 7 @40454 has 1 MA's), (11, 40388), (20, 40277), (Start: 22 @40259 has 1 MA's), (23, 40253), (Start: 26 @40208 has 35 MA's), (32, 40136), (37, 40055), (38, 40049), (42, 39959), (44, 39920), (45, 39884), (50, 39827), (53, 39809), (57, 39749), (61, 39704), (64, 39668), (68, 39635), (69, 39602), (71, 39569), (73, 39530),

Gene: Athena\_46 Start: 40955, Stop: 40257, Start Num: 26

Candidate Starts for Athena\_46:

(Start: 7 @41201 has 1 MA's), (11, 41135), (20, 41024), (Start: 22 @41006 has 1 MA's), (23, 41000), (Start: 26 @40955 has 35 MA's), (32, 40883), (37, 40802), (38, 40796), (42, 40706), (44, 40667), (45, 40631), (50, 40574), (53, 40556), (57, 40496), (61, 40451), (64, 40415), (68, 40382), (69, 40349), (71, 40316), (73, 40277),

Gene: Audrey\_45 Start: 40228, Stop: 39506, Start Num: 24

Candidate Starts for Audrey\_45:

(Start: 24 @40228 has 14 MA's), (Start: 26 @40204 has 35 MA's), (32, 40132), (37, 40051), (38, 40045), (40, 39982), (42, 39955), (44, 39916), (45, 39880), (46, 39856), (50, 39823), (53, 39805), (57, 39745), (61, 39700), (64, 39664), (66, 39640), (68, 39631), (69, 39598), (71, 39565), (73, 39526),

Gene: Baloo\_45 Start: 40231, Stop: 39509, Start Num: 24

Candidate Starts for Baloo\_45:

(Start: 24 @40231 has 14 MA's), (Start: 26 @40207 has 35 MA's), (32, 40135), (37, 40054), (38, 40048), (40, 39985), (42, 39958), (44, 39919), (45, 39883), (46, 39859), (50, 39826), (53, 39808), (57, 39748), (61, 39703), (64, 39667), (68, 39634), (69, 39601), (71, 39568), (73, 39529),

Gene: Ben11\_44 Start: 40026, Stop: 39328, Start Num: 26

Candidate Starts for Ben11\_44:

(Start: 24 @40050 has 14 MA's), (Start: 26 @40026 has 35 MA's), (32, 39954), (37, 39873), (38, 39867), (42, 39777), (44, 39738), (45, 39702), (50, 39645), (53, 39627), (57, 39567), (61, 39522), (64, 39486), (68, 39453), (69, 39420), (71, 39387), (73, 39348),

Gene: Bernardo\_46 Start: 40776, Stop: 40054, Start Num: 24

Candidate Starts for Bernardo\_46:

(Start: 24 @40776 has 14 MA's), (Start: 26 @40752 has 35 MA's), (32, 40680), (37, 40599), (38, 40593), (42, 40503), (44, 40464), (45, 40428), (50, 40371), (53, 40353), (57, 40293), (61, 40248), (64, 40212), (66, 40188), (68, 40179), (69, 40146), (71, 40113), (73, 40074),

Gene: Briakila\_46 Start: 40974, Stop: 40276, Start Num: 26

Candidate Starts for Briakila\_46:

(Start: 7 @41220 has 1 MA's), (11, 41154), (20, 41043), (Start: 22 @41025 has 1 MA's), (23, 41019), (Start: 26 @40974 has 35 MA's), (32, 40902), (37, 40821), (38, 40815), (42, 40725), (44, 40686), (45, 40650), (50, 40593), (53, 40575), (57, 40515), (61, 40470), (64, 40434), (68, 40401), (69, 40368), (71, 40335), (73, 40296),

Gene: Casbah\_44 Start: 40080, Stop: 39358, Start Num: 24

Candidate Starts for Casbah\_44:

(Start: 24 @40080 has 14 MA's), (Start: 26 @40056 has 35 MA's), (32, 39984), (37, 39903), (38, 39897), (42, 39807), (44, 39768), (45, 39732), (50, 39675), (53, 39657), (57, 39597), (61, 39552), (64, 39516), (68, 39483), (69, 39450), (71, 39417), (73, 39378),

Gene: ChaChing\_45 Start: 40219, Stop: 39521, Start Num: 26

Candidate Starts for ChaChing\_45:

(Start: 7 @40465 has 1 MA's), (11, 40399), (20, 40288), (Start: 22 @40270 has 1 MA's), (23, 40264), (Start: 26 @40219 has 35 MA's), (32, 40147), (37, 40066), (38, 40060), (42, 39970), (44, 39931), (45, 39895), (50, 39838), (53, 39820), (57, 39760), (61, 39715), (64, 39679), (68, 39646), (69, 39613), (71, 39580), (73, 39541),

Gene: Chalmers\_45 Start: 41011, Stop: 40313, Start Num: 26

Candidate Starts for Chalmers\_45:

(Start: 7 @41257 has 1 MA's), (11, 41191), (20, 41080), (Start: 22 @41062 has 1 MA's), (23, 41056), (Start: 26 @41011 has 35 MA's), (32, 40939), (37, 40858), (38, 40852), (42, 40762), (44, 40723), (45, 40687), (50, 40630), (53, 40612), (57, 40552), (61, 40507), (64, 40471), (68, 40438), (69, 40405), (71, 40372), (73, 40333),

Gene: Chandler\_45 Start: 40987, Stop: 40289, Start Num: 26

Candidate Starts for Chandler\_45:

(Start: 7 @41233 has 1 MA's), (11, 41167), (20, 41056), (Start: 22 @41038 has 1 MA's), (23, 41032), (Start: 26 @40987 has 35 MA's), (32, 40915), (37, 40834), (38, 40828), (42, 40738), (44, 40699), (45, 40663), (50, 40606), (53, 40588), (57, 40528), (61, 40483), (64, 40447), (68, 40414), (69, 40381), (71, 40348), (73, 40309),

Gene: Chentzyk\_45 Start: 40592, Stop: 39870, Start Num: 24

Candidate Starts for Chentzyk\_45:

(Start: 24 @40592 has 14 MA's), (Start: 26 @40568 has 35 MA's), (32, 40496), (37, 40415), (38, 40409), (42, 40319), (44, 40280), (45, 40244), (50, 40187), (53, 40169), (57, 40109), (61, 40064), (64, 40028), (68, 39995), (69, 39962), (71, 39929), (73, 39890),

Gene: Compostia\_46 Start: 40635, Stop: 39937, Start Num: 26

Candidate Starts for Compostia\_46:

(Start: 7 @40881 has 1 MA's), (11, 40815), (20, 40704), (Start: 22 @40686 has 1 MA's), (23, 40680), (Start: 26 @40635 has 35 MA's), (32, 40563), (37, 40482), (38, 40476), (42, 40386), (44, 40347), (45, 40311), (50, 40254), (53, 40236), (57, 40176), (61, 40131), (64, 40095), (68, 40062), (69, 40029), (71, 39996), (73, 39957),

Gene: Corofin\_45 Start: 40230, Stop: 39532, Start Num: 26

Candidate Starts for Corofin\_45:

(Start: 7 @40476 has 1 MA's), (11, 40410), (20, 40299), (Start: 22 @40281 has 1 MA's), (23, 40275), (Start: 26 @40230 has 35 MA's), (32, 40158), (37, 40077), (38, 40071), (42, 39981), (44, 39942), (45, 39906), (50, 39849), (53, 39831), (57, 39771), (61, 39726), (64, 39690), (68, 39657), (69, 39624), (71, 39591), (73, 39552),

Gene: Daisy\_45 Start: 40231, Stop: 39533, Start Num: 26

Candidate Starts for Daisy\_45:

(Start: 7 @40477 has 1 MA's), (11, 40411), (20, 40300), (Start: 22 @40282 has 1 MA's), (23, 40276), (Start: 26 @40231 has 35 MA's), (32, 40159), (37, 40078), (38, 40072), (42, 39982), (44, 39943), (45, 39907), (50, 39850), (53, 39832), (57, 39772), (61, 39727), (64, 39691), (68, 39658), (69, 39625), (71, 39592), (73, 39553),

Gene: Deenasa\_45 Start: 40966, Stop: 40268, Start Num: 26

Candidate Starts for Deenasa\_45:

(Start: 7 @41212 has 1 MA's), (11, 41146), (20, 41035), (Start: 22 @41017 has 1 MA's), (23, 41011), (Start: 26 @40966 has 35 MA's), (32, 40894), (37, 40813), (38, 40807), (42, 40717), (44, 40678), (45, 40642), (50, 40585), (53, 40567), (57, 40507), (61, 40462), (64, 40426), (68, 40393), (69, 40360), (71, 40327), (73, 40288),

Gene: Devonte\_45 Start: 40219, Stop: 39497, Start Num: 24

Candidate Starts for Devonte\_45:

(Start: 24 @40219 has 14 MA's), (Start: 26 @40195 has 35 MA's), (32, 40123), (37, 40042), (38, 40036), (42, 39946), (44, 39907), (45, 39871), (50, 39814), (53, 39796), (57, 39736), (61, 39691), (64, 39655), (68, 39622), (69, 39589), (71, 39556), (73, 39517),

Gene: ForDig\_39 Start: 38242, Stop: 37472, Start Num: 13

Candidate Starts for ForDig\_39:

(Start: 13 @38242 has 5 MA's), (15, 38203), (27, 38083), (30, 38059), (34, 37981), (46, 37795), (47, 37792), (48, 37771), (58, 37690), (59, 37675),

Gene: Funsized\_49 Start: 43198, Stop: 42434, Start Num: 13

Candidate Starts for Funsized\_49:

(Start: 13 @43198 has 5 MA's), (Start: 26 @43051 has 35 MA's), (29, 43024), (30, 43015), (33, 42967), (36, 42916), (41, 42823), (46, 42757), (47, 42754), (52, 42712), (58, 42652), (60, 42634),

Gene: Gadget\_46 Start: 40218, Stop: 39520, Start Num: 26

Candidate Starts for Gadget\_46:

(Start: 7 @40464 has 1 MA's), (11, 40398), (20, 40287), (Start: 22 @40269 has 1 MA's), (23, 40263), (Start: 26 @40218 has 35 MA's), (32, 40146), (37, 40065), (38, 40059), (42, 39969), (44, 39930), (45, 39894), (50, 39837), (53, 39819), (57, 39759), (61, 39714), (64, 39678), (68, 39645), (69, 39612), (71,

39579), (73, 39540),

Gene: Galactica\_35 Start: 25932, Stop: 26900, Start Num: 4

Candidate Starts for Galactica\_35:

(3, 25893), (Start: 4 @25932 has 1 MA's), (5, 25947), (6, 25992), (8, 26022), (Start: 26 @26250 has 35 MA's), (51, 26625), (54, 26643), (64, 26745), (68, 26775), (74, 26895),

Gene: Gervas\_45 Start: 40185, Stop: 39487, Start Num: 26

Candidate Starts for Gervas\_45:

(Start: 24 @40209 has 14 MA's), (Start: 26 @40185 has 35 MA's), (32, 40113), (37, 40032), (38, 40026), (42, 39936), (44, 39897), (45, 39861), (50, 39804), (53, 39786), (57, 39726), (61, 39681), (64, 39645), (68, 39612), (69, 39579), (71, 39546), (73, 39507),

Gene: GlenHope\_46 Start: 40198, Stop: 39500, Start Num: 26

Candidate Starts for GlenHope\_46:

(Start: 7 @40444 has 1 MA's), (11, 40378), (20, 40267), (Start: 22 @40249 has 1 MA's), (23, 40243), (Start: 26 @40198 has 35 MA's), (32, 40126), (37, 40045), (38, 40039), (42, 39949), (44, 39910), (45, 39874), (50, 39817), (53, 39799), (57, 39739), (61, 39694), (64, 39658), (68, 39625), (69, 39592), (71, 39559), (73, 39520),

Gene: Glubnar\_46 Start: 40197, Stop: 39499, Start Num: 26

Candidate Starts for Glubnar\_46:

(Start: 7 @40443 has 1 MA's), (11, 40377), (20, 40266), (Start: 22 @40248 has 1 MA's), (23, 40242), (Start: 26 @40197 has 35 MA's), (32, 40125), (37, 40044), (38, 40038), (42, 39948), (44, 39909), (45, 39873), (50, 39816), (53, 39798), (57, 39738), (61, 39693), (64, 39657), (68, 39624), (69, 39591), (71, 39558), (73, 39519),

Gene: Halfpint\_44 Start: 40024, Stop: 39326, Start Num: 26

Candidate Starts for Halfpint\_44:

(17, 40111), (18, 40105), (20, 40093), (Start: 22 @40075 has 1 MA's), (23, 40069), (Start: 26 @40024 has 35 MA's), (32, 39952), (37, 39871), (38, 39865), (42, 39775), (44, 39736), (45, 39700), (50, 39643), (53, 39625), (57, 39565), (61, 39520), (64, 39484), (68, 39451), (69, 39418), (71, 39385), (73, 39346),

Gene: HarveySr\_45 Start: 40191, Stop: 39493, Start Num: 26

Candidate Starts for HarveySr\_45:

(Start: 7 @40437 has 1 MA's), (11, 40371), (20, 40260), (Start: 22 @40242 has 1 MA's), (23, 40236), (Start: 26 @40191 has 35 MA's), (32, 40119), (37, 40038), (38, 40032), (42, 39942), (44, 39903), (45, 39867), (50, 39810), (53, 39792), (57, 39732), (61, 39687), (64, 39651), (68, 39618), (69, 39585), (71, 39552), (73, 39513),

Gene: Heathcliff\_45 Start: 40169, Stop: 39471, Start Num: 26

Candidate Starts for Heathcliff\_45:

(Start: 7 @40415 has 1 MA's), (11, 40349), (20, 40238), (Start: 22 @40220 has 1 MA's), (23, 40214), (Start: 26 @40169 has 35 MA's), (32, 40097), (37, 40016), (38, 40010), (42, 39920), (44, 39881), (45, 39845), (50, 39788), (53, 39770), (57, 39710), (61, 39665), (64, 39629), (68, 39596), (69, 39563), (71, 39530), (73, 39491),

Gene: Hiyaa\_36 Start: 27139, Stop: 28143, Start Num: 2

Candidate Starts for Hiyaa\_36:

(1, 27109), (Start: 2 @27139 has 3 MA's), (5, 27199), (8, 27271), (Start: 26 @27481 has 35 MA's), (51, 27868), (56, 27910), (64, 27988), (65, 27991), (68, 28018), (74, 28138),

Gene: Hosp\_037 Start: 36449, Stop: 35679, Start Num: 13

Candidate Starts for Hosp\_037:

(Start: 13 @36449 has 5 MA's), (15, 36410), (Start: 26 @36302 has 35 MA's), (27, 36290), (30, 36266), (34, 36188), (46, 36002), (47, 35999), (48, 35978), (58, 35897), (59, 35882),

Gene: Imvubu\_38 Start: 37209, Stop: 36445, Start Num: 13

Candidate Starts for Imvubu\_38:

(Start: 13 @37209 has 5 MA's), (16, 37146), (21, 37113), (25, 37077), (Start: 26 @37062 has 35 MA's), (30, 37026), (33, 36978), (36, 36927), (55, 36699), (58, 36663), (59, 36648), (60, 36645), (63, 36624),

Gene: Jackstina\_42 Start: 40128, Stop: 39430, Start Num: 26

Candidate Starts for Jackstina\_42:

(Start: 7 @40374 has 1 MA's), (11, 40308), (20, 40197), (Start: 22 @40179 has 1 MA's), (23, 40173), (Start: 26 @40128 has 35 MA's), (32, 40056), (37, 39975), (38, 39969), (42, 39879), (44, 39840), (45, 39804), (50, 39747), (53, 39729), (57, 39669), (61, 39624), (64, 39588), (68, 39555), (69, 39522), (71, 39489), (73, 39450),

Gene: Jolie1\_039 Start: 38233, Stop: 37463, Start Num: 13

Candidate Starts for Jolie1\_039:

(Start: 13 @38233 has 5 MA's), (15, 38194), (Start: 26 @38086 has 35 MA's), (27, 38074), (30, 38050), (34, 37972), (43, 37813), (46, 37786), (47, 37783), (48, 37762), (58, 37681), (59, 37666),

Gene: Kamiyu\_45 Start: 40177, Stop: 39479, Start Num: 26

Candidate Starts for Kamiyu\_45:

(17, 40264), (18, 40258), (20, 40246), (Start: 22 @40228 has 1 MA's), (23, 40222), (Start: 26 @40177 has 35 MA's), (32, 40105), (37, 40024), (38, 40018), (42, 39928), (44, 39889), (45, 39853), (50, 39796), (53, 39778), (57, 39718), (61, 39673), (64, 39637), (68, 39604), (69, 39571), (71, 39538), (73, 39499),

Gene: KayaCho\_39 Start: 38235, Stop: 37462, Start Num: 13

Candidate Starts for KayaCho\_39:

(Start: 13 @38235 has 5 MA's), (Start: 26 @38085 has 35 MA's), (30, 38049), (34, 37971), (43, 37812), (46, 37785), (47, 37782), (48, 37761), (58, 37680), (59, 37665), (62, 37647),

Gene: Keanu\_36 Start: 26959, Stop: 27984, Start Num: 2

Candidate Starts for Keanu\_36:

(1, 26929), (Start: 2 @26959 has 3 MA's), (5, 27019), (8, 27091), (Start: 26 @27310 has 35 MA's), (49, 27691), (51, 27706), (65, 27832), (67, 27853), (68, 27859), (72, 27955), (74, 27979),

Gene: Kokushibo\_37 Start: 27062, Stop: 28093, Start Num: 2

Candidate Starts for Kokushibo\_37:

(1, 27032), (Start: 2 @27062 has 3 MA's), (8, 27194), (Start: 26 @27404 has 35 MA's), (49, 27785), (51, 27800), (65, 27941), (67, 27962), (68, 27968), (72, 28064), (74, 28088),

Gene: Kronus\_44 Start: 40787, Stop: 40089, Start Num: 26

Candidate Starts for Kronus\_44:

(Start: 7 @41033 has 1 MA's), (11, 40967), (20, 40856), (Start: 22 @40838 has 1 MA's), (23, 40832), (Start: 26 @40787 has 35 MA's), (32, 40715), (37, 40634), (38, 40628), (42, 40538), (44, 40499), (45, 40463), (50, 40406), (53, 40388), (57, 40328), (61, 40283), (64, 40247), (66, 40223), (68, 40214), (69, 40181), (71, 40148), (73, 40109),

Gene: LestyG\_45 Start: 40232, Stop: 39510, Start Num: 24

Candidate Starts for LestyG\_45:

(Start: 24 @40232 has 14 MA's), (Start: 26 @40208 has 35 MA's), (32, 40136), (37, 40055), (38, 40049), (42, 39959), (44, 39920), (45, 39884), (50, 39827), (53, 39809), (57, 39749), (61, 39704), (64,

39668), (68, 39635), (69, 39602), (71, 39569), (73, 39530),

Gene: Marley1013\_45 Start: 40986, Stop: 40288, Start Num: 26

Candidate Starts for Marley1013\_45:

(Start: 24 @41010 has 14 MA's), (Start: 26 @40986 has 35 MA's), (32, 40914), (37, 40833), (38, 40827), (42, 40737), (44, 40698), (45, 40662), (50, 40605), (53, 40587), (57, 40527), (61, 40482), (64, 40446), (68, 40413), (69, 40380), (71, 40347), (73, 40308),

Gene: Marlia\_45 Start: 40189, Stop: 39491, Start Num: 26

Candidate Starts for Marlia\_45:

(Start: 7 @40435 has 1 MA's), (11, 40369), (20, 40258), (Start: 22 @40240 has 1 MA's), (23, 40234), (Start: 26 @40189 has 35 MA's), (32, 40117), (37, 40036), (38, 40030), (42, 39940), (44, 39901), (45, 39865), (50, 39808), (53, 39790), (57, 39730), (61, 39685), (64, 39649), (68, 39616), (69, 39583), (71, 39550), (73, 39511),

Gene: MmasiCarm\_45 Start: 40214, Stop: 39492, Start Num: 24

Candidate Starts for MmasiCarm\_45:

(Start: 24 @40214 has 14 MA's), (Start: 26 @40190 has 35 MA's), (32, 40118), (37, 40037), (38, 40031), (42, 39941), (44, 39902), (45, 39866), (50, 39809), (53, 39791), (57, 39731), (61, 39686), (64, 39650), (68, 39617), (69, 39584), (71, 39551), (73, 39512),

Gene: Mortcellus\_44 Start: 40866, Stop: 40144, Start Num: 24

Candidate Starts for Mortcellus\_44:

(Start: 24 @40866 has 14 MA's), (Start: 26 @40842 has 35 MA's), (32, 40770), (37, 40689), (38, 40683), (42, 40593), (44, 40554), (45, 40518), (50, 40461), (53, 40443), (57, 40383), (61, 40338), (64, 40302), (66, 40278), (68, 40269), (69, 40236), (71, 40203), (73, 40164),

Gene: Morty007\_45 Start: 40986, Stop: 40288, Start Num: 26

Candidate Starts for Morty007\_45:

(Start: 24 @41010 has 14 MA's), (Start: 26 @40986 has 35 MA's), (32, 40914), (37, 40833), (38, 40827), (42, 40737), (44, 40698), (45, 40662), (50, 40605), (53, 40587), (57, 40527), (61, 40482), (64, 40446), (68, 40413), (69, 40380), (71, 40347), (73, 40308),

Gene: Mulaychimus\_45 Start: 40172, Stop: 39474, Start Num: 26

Candidate Starts for Mulaychimus\_45:

(Start: 7 @40418 has 1 MA's), (11, 40352), (20, 40241), (Start: 22 @40223 has 1 MA's), (23, 40217), (Start: 26 @40172 has 35 MA's), (32, 40100), (37, 40019), (38, 40013), (42, 39923), (44, 39884), (45, 39848), (50, 39791), (53, 39773), (57, 39713), (61, 39668), (64, 39632), (68, 39599), (69, 39566), (71, 39533), (73, 39494),

Gene: Neos5\_45 Start: 41052, Stop: 40303, Start Num: 22

Candidate Starts for Neos5\_45:

(Start: 7 @41247 has 1 MA's), (11, 41181), (20, 41070), (Start: 22 @41052 has 1 MA's), (23, 41046), (Start: 26 @41001 has 35 MA's), (32, 40929), (37, 40848), (38, 40842), (42, 40752), (44, 40713), (45, 40677), (50, 40620), (53, 40602), (57, 40542), (61, 40497), (64, 40461), (68, 40428), (69, 40395), (71, 40362), (73, 40323),

Gene: Nozo\_45 Start: 40966, Stop: 40268, Start Num: 26

Candidate Starts for Nozo\_45:

(Start: 7 @41212 has 1 MA's), (11, 41146), (20, 41035), (Start: 22 @41017 has 1 MA's), (23, 41011), (Start: 26 @40966 has 35 MA's), (32, 40894), (37, 40813), (38, 40807), (42, 40717), (44, 40678), (45, 40642), (50, 40585), (53, 40567), (57, 40507), (61, 40462), (64, 40426), (68, 40393), (69, 40360), (71, 40327), (73, 40288),

Gene: Obutu\_45 Start: 40214, Stop: 39492, Start Num: 24

Candidate Starts for Obutu\_45:

(Start: 24 @40214 has 14 MA's), (Start: 26 @40190 has 35 MA's), (32, 40118), (37, 40037), (38, 40031), (42, 39941), (44, 39902), (45, 39866), (50, 39809), (53, 39791), (57, 39731), (61, 39686), (64, 39650), (68, 39617), (69, 39584), (71, 39551), (73, 39512),

Gene: Olivio\_44 Start: 40083, Stop: 39361, Start Num: 24

Candidate Starts for Olivio\_44:

(Start: 24 @40083 has 14 MA's), (Start: 26 @40059 has 35 MA's), (32, 39987), (37, 39906), (38, 39900), (42, 39810), (44, 39771), (45, 39735), (50, 39678), (53, 39660), (57, 39600), (61, 39555), (64, 39519), (68, 39486), (69, 39453), (71, 39420), (73, 39381),

Gene: OrangeOswald\_45 Start: 40207, Stop: 39509, Start Num: 26

Candidate Starts for OrangeOswald\_45:

(Start: 7 @40453 has 1 MA's), (11, 40387), (20, 40276), (Start: 22 @40258 has 1 MA's), (23, 40252), (Start: 26 @40207 has 35 MA's), (32, 40135), (37, 40054), (38, 40048), (42, 39958), (44, 39919), (45, 39883), (50, 39826), (53, 39808), (57, 39748), (61, 39703), (64, 39667), (68, 39634), (69, 39601), (71, 39568), (73, 39529),

Gene: Phaedrus\_43 Start: 40373, Stop: 39429, Start Num: 7

Candidate Starts for Phaedrus\_43:

(Start: 7 @40373 has 1 MA's), (11, 40307), (20, 40196), (Start: 22 @40178 has 1 MA's), (23, 40172), (Start: 26 @40127 has 35 MA's), (32, 40055), (37, 39974), (38, 39968), (42, 39878), (44, 39839), (45, 39803), (50, 39746), (53, 39728), (57, 39668), (61, 39623), (64, 39587), (68, 39554), (69, 39521), (71, 39488), (73, 39449),

Gene: Phayeta\_46 Start: 40096, Stop: 39374, Start Num: 24

Candidate Starts for Phayeta\_46:

(Start: 24 @40096 has 14 MA's), (Start: 26 @40072 has 35 MA's), (32, 40000), (37, 39919), (38, 39913), (42, 39823), (44, 39784), (45, 39748), (50, 39691), (53, 39673), (57, 39613), (61, 39568), (64, 39532), (68, 39499), (69, 39466), (71, 39433), (73, 39394),

Gene: Philly\_44 Start: 40058, Stop: 39360, Start Num: 26

Candidate Starts for Philly\_44:

(Start: 7 @40304 has 1 MA's), (11, 40238), (20, 40127), (Start: 22 @40109 has 1 MA's), (23, 40103), (Start: 26 @40058 has 35 MA's), (32, 39986), (37, 39905), (38, 39899), (42, 39809), (44, 39770), (45, 39734), (50, 39677), (53, 39659), (57, 39599), (61, 39554), (64, 39518), (68, 39485), (69, 39452), (71, 39419), (73, 39380),

Gene: Phlyer\_45 Start: 40946, Stop: 40248, Start Num: 26

Candidate Starts for Phlyer\_45:

(Start: 7 @41192 has 1 MA's), (11, 41126), (20, 41015), (Start: 22 @40997 has 1 MA's), (23, 40991), (Start: 26 @40946 has 35 MA's), (32, 40874), (37, 40793), (38, 40787), (42, 40697), (44, 40658), (45, 40622), (50, 40565), (53, 40547), (57, 40487), (61, 40442), (64, 40406), (68, 40373), (69, 40340), (71, 40307), (73, 40268),

Gene: Pipefish\_47 Start: 41599, Stop: 40901, Start Num: 26

Candidate Starts for Pipefish\_47:

(Start: 24 @41623 has 14 MA's), (Start: 26 @41599 has 35 MA's), (32, 41527), (37, 41446), (38, 41440), (42, 41350), (44, 41311), (45, 41275), (50, 41218), (53, 41200), (57, 41140), (61, 41095), (64, 41059), (66, 41035), (68, 41026), (69, 40993), (71, 40960), (73, 40921),

Gene: RagingRooster\_45 Start: 40208, Stop: 39510, Start Num: 26

Candidate Starts for RagingRooster\_45:

(Start: 7 @40454 has 1 MA's), (11, 40388), (20, 40277), (Start: 22 @40259 has 1 MA's), (23, 40253), (Start: 26 @40208 has 35 MA's), (32, 40136), (37, 40055), (38, 40049), (42, 39959), (44, 39920), (45, 39884), (50, 39827), (53, 39809), (57, 39749), (61, 39704), (64, 39668), (68, 39635), (69, 39602), (71, 39569), (73, 39530),

Gene: Rinkes\_46 Start: 41695, Stop: 40898, Start Num: 9

Candidate Starts for Rinkes\_46:

(Start: 9 @41695 has 1 MA's), (12, 41677), (Start: 13 @41665 has 5 MA's), (Start: 26 @41509 has 35 MA's), (30, 41473), (36, 41374), (55, 41152), (58, 41116), (60, 41098), (63, 41077), (70, 40978),

Gene: Rita1961\_45 Start: 40215, Stop: 39493, Start Num: 24

Candidate Starts for Rita1961\_45:

(Start: 24 @40215 has 14 MA's), (Start: 26 @40191 has 35 MA's), (32, 40119), (37, 40038), (38, 40032), (42, 39942), (44, 39903), (45, 39867), (50, 39810), (53, 39792), (57, 39732), (61, 39687), (64, 39651), (68, 39618), (69, 39585), (71, 39552), (73, 39513),

Gene: RomaT\_45 Start: 40981, Stop: 40283, Start Num: 26

Candidate Starts for RomaT\_45:

(Start: 7 @41227 has 1 MA's), (11, 41161), (20, 41050), (Start: 22 @41032 has 1 MA's), (23, 41026), (Start: 26 @40981 has 35 MA's), (32, 40909), (37, 40828), (38, 40822), (42, 40732), (44, 40693), (45, 40657), (50, 40600), (53, 40582), (57, 40522), (61, 40477), (64, 40441), (68, 40408), (69, 40375), (71, 40342), (73, 40303),

Gene: Shenandoah\_45 Start: 40180, Stop: 39482, Start Num: 26

Candidate Starts for Shenandoah\_45:

(Start: 7 @40426 has 1 MA's), (11, 40360), (20, 40249), (Start: 22 @40231 has 1 MA's), (23, 40225), (Start: 26 @40180 has 35 MA's), (32, 40108), (37, 40027), (38, 40021), (42, 39931), (44, 39892), (45, 39856), (50, 39799), (53, 39781), (57, 39721), (61, 39676), (64, 39640), (68, 39607), (69, 39574), (71, 39541), (73, 39502),

Gene: SlippinJimmy\_45 Start: 40997, Stop: 40275, Start Num: 24

Candidate Starts for SlippinJimmy\_45:

(Start: 24 @40997 has 14 MA's), (Start: 26 @40973 has 35 MA's), (32, 40901), (37, 40820), (38, 40814), (42, 40724), (44, 40685), (45, 40649), (50, 40592), (53, 40574), (57, 40514), (61, 40469), (64, 40433), (68, 40400), (69, 40367), (71, 40334), (73, 40295),

Gene: Spocter\_35 Start: 27035, Stop: 28066, Start Num: 2

Candidate Starts for Spocter\_35:

(1, 27005), (Start: 2 @27035 has 3 MA's), (5, 27095), (8, 27167), (Start: 26 @27377 has 35 MA's), (49, 27758), (51, 27773), (65, 27914), (67, 27935), (68, 27941), (72, 28037), (74, 28061),

Gene: SwainyDoc\_45 Start: 40202, Stop: 39504, Start Num: 26

Candidate Starts for SwainyDoc\_45:

(Start: 24 @40226 has 14 MA's), (Start: 26 @40202 has 35 MA's), (32, 40130), (37, 40049), (38, 40043), (42, 39953), (44, 39914), (45, 39878), (50, 39821), (53, 39803), (57, 39743), (61, 39698), (64, 39662), (68, 39629), (69, 39596), (71, 39563), (73, 39524),

Gene: SynergyX\_45 Start: 40208, Stop: 39510, Start Num: 26

Candidate Starts for SynergyX\_45:

(Start: 7 @40454 has 1 MA's), (11, 40388), (20, 40277), (Start: 22 @40259 has 1 MA's), (23, 40253), (Start: 26 @40208 has 35 MA's), (32, 40136), (37, 40055), (38, 40049), (42, 39959), (44, 39920), (45,

39884), (50, 39827), (53, 39809), (57, 39749), (61, 39704), (64, 39668), (68, 39635), (69, 39602), (71, 39569), (73, 39530),

Gene: Thonko\_45 Start: 38227, Stop: 37415, Start Num: 13

Candidate Starts for Thonko\_45:

(10, 38251), (Start: 13 @38227 has 5 MA's), (14, 38212), (18, 38143), (19, 38137), (28, 38041), (31, 38023), (35, 37951), (39, 37897), (47, 37735), (71, 37480),

Gene: TinyTerror\_45 Start: 40217, Stop: 39495, Start Num: 24

Candidate Starts for TinyTerror\_45:

(Start: 24 @40217 has 14 MA's), (Start: 26 @40193 has 35 MA's), (32, 40121), (37, 40040), (38, 40034), (42, 39944), (44, 39905), (45, 39869), (50, 39812), (53, 39794), (57, 39734), (61, 39689), (64, 39653), (68, 39620), (69, 39587), (71, 39554), (73, 39515),

Gene: Tydolla\_45 Start: 40942, Stop: 40244, Start Num: 26

Candidate Starts for Tydolla\_45:

(Start: 7 @41188 has 1 MA's), (11, 41122), (20, 41011), (Start: 22 @40993 has 1 MA's), (23, 40987), (Start: 26 @40942 has 35 MA's), (32, 40870), (37, 40789), (38, 40783), (42, 40693), (44, 40654), (45, 40618), (50, 40561), (53, 40543), (57, 40483), (61, 40438), (64, 40402), (68, 40369), (69, 40336), (71, 40303), (73, 40264),

Gene: Yahalom\_45 Start: 40218, Stop: 39520, Start Num: 26

Candidate Starts for Yahalom\_45:

(Start: 7 @40464 has 1 MA's), (11, 40398), (20, 40287), (Start: 22 @40269 has 1 MA's), (23, 40263), (Start: 26 @40218 has 35 MA's), (32, 40146), (37, 40065), (38, 40059), (42, 39969), (44, 39930), (45, 39894), (50, 39837), (53, 39819), (57, 39759), (61, 39714), (64, 39678), (68, 39645), (69, 39612), (71, 39579), (73, 39540),

Gene: Yinz\_45 Start: 40244, Stop: 39546, Start Num: 26

Candidate Starts for Yinz\_45:

(Start: 7 @40490 has 1 MA's), (11, 40424), (20, 40313), (Start: 22 @40295 has 1 MA's), (23, 40289), (Start: 26 @40244 has 35 MA's), (32, 40172), (37, 40091), (38, 40085), (42, 39995), (44, 39956), (45, 39920), (50, 39863), (53, 39845), (57, 39785), (61, 39740), (64, 39704), (66, 39680), (68, 39671), (69, 39638), (71, 39605), (73, 39566),